

# Architecture and Method to Generate Common PUF and TRNG Functions

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## Abstract

The PUF and TRNG functions exploit two physical phenomena: Technological dispersion (PUF) and Noise (TRNG). The noise for PUF is a crucial problem as the high level of noise can damage its steadiness level, whereas the TRNG requires a high level of noise, with a significant undeterministic noise component. Thus a common structure to generate both PUF and TRNG is necessarily the result of a compromise to control the noise impact. We show in this talk that it is possible to obtain such structure by using an "open loop TRNG" as a common base to generate a PUF/TRNG function. A method to ensure a high level of PUF steadiness and a high entropy level of TRNG is presented. The results obtained from simulation and from a prototype circuit show that the proposed solution is very cost effective and could provide excellent characteristics for both PUF and TRNG generation.